

REMARKS

Claims 1-16 are pending in the application. An Office Action was mailed on November 26, 2004. In the present Response, Applicants amend claims 15 and 16.

REJECTION UNDER 35 U.S.C. § 112

Claims 15 and 16 are rejected under the first paragraph of 35 U.S.C. § 112 as failing to comply with the enablement requirement. Specifically, the Examiner finds that the term "the second routing information being written in a grouping without the virtual hierarchy number in the routing table of the first network-type routing database unit" to be unsupported by the specification. For claims 15 and 16, this term respectively corresponds to the descriptions of step 15 of FIG. 19 and step 24 of FIG. 20. For clarification, Applicants amend the term in each of claims 15 and 16 to read "the second routing information being written without ~~in a~~ grouping ~~without~~ with the virtual hierarchy number in the routing table of the ~~first~~ second network-type routing database unit". On this basis, Applicants respectfully request that the rejection be withdrawn.

REJECTION UNDER 35 U.S.C. § 103

Claims 1 – 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,038,233 to Hamamoto et al. in view of U.S. Patent No. 5,251,205 to Callon et al. Applicants respectfully traverse this rejection.

In a Response to Office Action of September 10, 2004, Applicants made in part the following argument:

Applicants thank the Examiner for participating in an interview with Applicants' representative on August 5, 2004 to further discuss the nature of Applicants' claimed invention. In this interview, Applicants' representative argued that

Hamamoto and Applicants essentially teach an address conversion and routing method that is distinct from the encapsulation method disclosed by Callon, and that there is accordingly insufficient motivation for combining the references.

Applicants' representative further argued that neither Hamamoto nor Callon teach Applicants' claimed virtual hierarchy number that both corresponds to the subset of address bits of the network-identifying portion of the address space of the second protocol type, and identifies a virtual portion of the network of the second protocol type at which the network of the first protocol type is interfaced via a router. Thus, even assuming sufficient motivation to combine the two references, the combination would still fail to teach or suggest Applicants' claimed virtual hierarchy number. Rather, the combination of Hamamoto and Callon would suggest routing in the hierarchical network by means of addresses based on existing hierarchy numbers in the hierarchical network. In contrast to the disclosed references, by means of the virtual hierarchy number, Applicants' claimed method and apparatus transforms the non-hierarchical network into a unique sub-network of the hierarchical network (i.e. subordinate to the router for routing to the hierarchical network).

In an interview summary of August 6, 2004, the Examiner summarized the interview results as follows:

Applicant stated that the combination of Hamamoto and Callon does not disclose all of the limitations of the claims since the combination does not teach that the IPv4 network is treated as a sub-network of the IPv6 network. Examiner states that the claims do not specify that the IPv4 network is treated as a sub-network of the IPv6 network. Instead, the claims only state that the IPv4 network is assigned addresses corresponding to addresses in the IPv6 network. Examiner maintains that such limitations are found in the combination.

Accordingly, and at the Examiner's suggestion, Applicants amend independent claims 1 and 7 to recite that the "network of the second type [is assigned] a virtual hierarchy number that corresponds to the subset of address bits of the network-identifying portion of the first address space and identifies the network of the second type as a network of the first type subordinate to a router for routing the packet to the network of the first type". Support for this amendment may be found, for example, in Applicants' substitute specification at page 2, line 45 through page 3, line 12; page 7, line 12 through page 8, line 28; and page 26, lines 1 - 9.

The Examiner finds these arguments to be unpersuasive, suggesting that the amended claim language, which provides that "the network of the second type [is assigned] a virtual hierarchy number that ... identifies the network of the second type as a network of the first type

subordinate to a router for routing the packet to the network of the first type", falls short of providing that the IPv4 network is treated as a sub-network of the IPv6 network. Applicants respectfully disagree.

Sub-networks can be defined to represent identifiably separate portions of a network (see, e.g., Network Working Group's RFC 950, August 1985, defining a sub-networks as "logically visible sub-sections of a single [network]"). A virtual hierarchy number as claimed represents "a subset of address bits of a network-identifying portion of an address space". Applicants respectfully submit that, a hierarchy number that can provide routing control by providing a unique identifier for a portion of a network address space inherently identifies a sub-network. As a virtual hierarchy number as claimed represents such an identifier as corresponds to a first address space, and is assigned to a network of a second type, Applicants respectfully submit that the virtually hierarchy causes the network of the second type to be viewed with reference to the network of the first type as a sub-network of the network of the first type.

The Examiner further suggests that, in the encapsulation method suggested by Callon, the encapsulating router effectively treats the network providing packets for encapsulation as a subordinate network, and that the assignment of a dedicated virtual hierarchy number would be obvious in view of the Hamamoto and Callon references. Applicants again respectfully disagree.

At column 3, lines 22 – 31, Callon describes the encapsulation process as follows:

When a user data packet formatted in protocol A is received, at a gateway router, the gateway router "encapsulates" the user data packet in a protocol B header (i.e., generates a protocol B header and places the protocol A user data packet, including the protocol A header, into the data area of the protocol B user data packet). The encapsulated protocol A user data packet is then addressed to the second gateway router, and transmitted through the protocol B network.

Unlike Applicant's claimed virtual hierarchy number, Callon's encapsulation method imposes no requirement for the protocol A packet to be associated with a protocol A network

that is identified by an address-identifying component of the protocol B header. As described by Callon, two gateway routers in a protocol B network are rather manually configured to encapsulate and transport packets between each other without any regard to the contents of the packets that are being transported. Callon makes no stipulation that the addresses provided in the protocol B network be capable of identifying the protocol A network.

In sharp contrast, and as illustrated for example by Applicants' FIG. 10, in preparing to transport a packet of the second network type via a network of the first type (e.g., IPv4 packet via an IPv6 network), Applicants' method provides a network address for a packet of the second type in a packet network of the first type that includes both a virtual hierarchy number (e.g., SLA ID) corresponding to the network of the second type, and address information of the second network type (e.g., IPv4 address placed in lower 64 bits of IPv6 address). By way of contrast, ncapsulation as taught by Callon effectively eliminates the need for and thereby teaches away from the address conversion scheme taught both by Hamamoto and Applicants.

Accordingly, Applicants respectfully submit that Hamamoto is not properly combined with Callon for the purpose of making Applicants' claimed invention obvious, and even if properly combined with Hamamoto, fails to teach or suggest Applicants' claimed virtual hierarchy number.

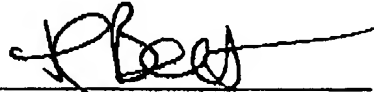
Accordingly, Applicants respectfully submit that the combination of Hamamoto and Callon fails to teach or suggest the amended limitation, and that amended independent claims 1 and 7 therefore stand in condition for allowance. As claims 2 – 6 and 8 – 14 each respectively depend from one of allowable claims 1 and 7, Applicants further submit that claims 2 – 6 and 8 – 14 are allowable for at least this reason.

CONCLUSION

An earnest effort has been made to be fully responsive to the Examiner's objections. In view of the above amendments and remarks, it is believed that claims 1 – 16, consisting of independent claims 1, 7, 15 and 16, and the claims dependent therefrom, are in condition for allowance. Passage of this case to allowance is earnestly solicited. However, if for any reason the Examiner should consider this application not to be in condition for allowance, he is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged on Deposit Account 50-1290.

Respectfully submitted,



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Docket No.: 100794-00187 (FUJI 19.448)
TJB:pm